Designing a MOOC for Citizen Planner Training

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ABSTRACT

Many major cities are now offering Citizen Planner certification programs to fulfill the need to educate residents and stakeholders on issues related to community development and urban planning. Unfortunately, many of the programs currently available have fees for registration, are located on-site, and are only available for a limited time.

Massive Online Open Courses (MOOCs) present a unique opportunity to provide Citizen Planner training for low to moderate income people and in a way that is both more affordable and accessible. Furthermore, this project involves the creation of a MOOC for Citizen Planner training and examines the value of using MOOCs for planning education. Findings support that the use of Keller’s ARCS Motivation Theory in combination with a thoughtful layout will engage and motivate MOOC participants both during and after completion of certification.
ACKNOWLEDGEMENTS

Many thanks to my parents, Clinton and Elizabeth, who taught me the importance of civic engagement and giving back to my community.
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BACKGROUND

As an urban planner, specializing in community development, I have spent several years working on projects in low-income neighborhoods. About two years ago, I wrote a proposal to design a program geared toward computer literacy and Citizen Planner training for community leaders. With the support of several local organizations, including participation of a mobile computer lab and funding from Local Initiatives Support Corporation (LISC), we were able to open registration for a pilot program in West Philadelphia.

From the very beginning the hope was that Citizen Planner training would eventually become an online academy that would offer support and opportunities for collaboration between community leaders. The next step towards making an online academy become reality is to design a prototype. The goal of this project is to design a Massive Open Online Course (MOOC) for Citizen Planner training. The final product will combine design and cognitive learning principles in a ways that will motivate students’ to successfully complete the course and continue using their knowledge and skills in their communities.

Research Questions

This project addresses three questions: (1) What are the benefits of using Massive Open Online Courses (MOOCs) for Citizen Planner training? (2) How can information design impact the user experience in a MOOC? (3) What design elements can be used for student motivation in a MOOC? This report is broken down into the following sections: Methods; Existing Programs; Literature Review; Implementation Plan; Anticipated Outcomes; and Conclusion.
METHODS

Initial feedback and support regarding the need for Citizen Planner training, for community activists, stakeholders, and low-income residents, was received from leadership at some of Philadelphia’s most established community development organizations, including representatives from the nation’s largest community development organization, Local Initiatives Support Corporation (LISC). Moving forward there was an initial review of commonly used design features provided by Coursera, Khan Academy, and Udacity, which are all leaders’ in the MOOC industry. Additionally, a literature review was conducted to examine the value of using a MOOC for Citizen Planner training.

EXISTING PROGRAMS

To determine course design for the prototype a total of 11 separate community development training programs were analyzed. The analysis included: 4 on-campus college level courses; 2 online college level courses, 3 on-site citizen planning certification courses; 1 online citizen planning certification course; and 1 set of online training community development modules. Each program was handpicked out of Google search results for: “community development syllabus”, “Citizen Planner training”, and “community development modules”. The programs chosen for analysis come from reputable colleges and universities, city governments, and local organizations.

With more than 180 Citizen Planner graduates representing 90 different neighborhoods, one of the most impressive models is the Citizen Planning Institute (CPI) of Philadelphia which has been running events since 2010. To highlight the success of the program its website features a blog about past participants and how they are using their training to better their communities.
The Citizen Planning Institute requires completion of three core courses that cover history, land-use, zoning, and development; and the choice of two out of three electives: funding, vacant land access, and zoning committee best practices. The most notable online program is the American Citizen Planner Consortium (ACP) provided by Michigan State University; Although the ACP website touts that it is designed for volunteer community leaders at the cost of $29 per module upwards to $349 for seven core modules, it is anything but affordable for low income people.

**LITERATURE REVIEW**

Support for e-learning in general has grown greatly in recent years as the Internet is becoming a more integral part of most Americans lives. According to a recent study from the U.S. Department of Commerce, more than 93% of the population are now living in areas with wired broadband and 46% of Americans are currently using smartphones (2013). With the growth in online users, massive open online courses (MOOCs) are becoming more widespread, allowing many universities to offer a wide-range of noncredit courses at no cost. At the same time, Citizen Planner initiatives and movements have become more visible across the country, yet most training events are held on-site and are often restricted by time and cost constraints. MOOCs present a unique opportunity to provide Citizen Planner training for low to moderate income people and in a way that is both more affordable and accessible. This review explores the value of using a MOOC for Citizen Planner training with special consideration of: (1) Urban Planning, (2) MOOCs, (3) Cognitive Learning, (4) Individual Differences, and (5) Design Considerations.
Urban Planning

Professional urban planners, also known as planners, typically work for city governments, development companies, or nonprofit organizations. Planners specializing in community development work in collaboration with residents, stakeholders, and government agencies to increase the quality of life and livability of neighborhoods. Community participation plays a key role in any successful community development process. The need for community leaders and residents to play more active roles in the planning process is great, especially in low-income and dilapidated communities.

Recent studies have found that citizen participation and action are most effective when participants already have the capacity and infrastructure to work together (Cohen-Blankshtain, Ron, & Perez, 2013). In an effort to build capacity, many citizen planning certification courses have been held by organizations all across the country and very few are also made available online for fees ranging from $99 upwards to several hundred dollars; Both time and financial constraints leave low-income residents unable to participate in such events. The development of a Massive Open Online Course (MOOC) could fulfill the need for a more affordable and accessible Citizen Planner education.

MOOCs

Massive Open Online Courses (MOOCs) have been around for a while now and are often made available to the general public for free or very low fees. In 2010, findings from a study of online learning environments, performed by the U.S. Department of Education, supported that online learning can be at least as effective as and at times are more effective than traditional face-to-face instruction (Means et al.). According to a more recent study of online education in
the U.S., conducted by Elaine Allen and Jeff Seaman, an estimated 6.7 million people are taking online courses and 77% of academic leaders believe that online education is at least the same or superior to face-to-face education (2013).

MOOCs are typically collaborative by design, which aids in motivating students to share ideas, constructively critique, and to build relationships through discussion. In order for a MOOC to work as intended it needs to be designed properly. A MOOC designed to facilitate learning would include the following five elements: (1) familiar experiences; (2) a number of information sources; (3) graded materials such as quizzes; (4) engaging discussions; (5) and some type of legacy that motivates students to continue learning beyond course completion (Scagnoli, 2012).

As access to technology continues to grow, MOOCs have the capability to provide new opportunities to traditionally marginalized persons’ from all around the world. MOOCs are becoming widely available on a number of topics, however even with an enormous need for citizen planning education, topics related to urban planning are not well represented in the world of MOOCs. In fact, most of the available online courses related to urban planning cost upwards from $99; they require that course modules or software be downloaded; they do not offer any type of collaboration between teacher and student; and they are not designed for lower-income residents who may have little experience with and access to computers.

Cognitive Learning

Cognitive psychology is the study of how we perceive, process, and store information in the mind (Alessi & Trollip, 2001). Essentially our knowledge is made up of a network of information nodes through which learning consists of linking, creating, and changing nodes (2001). Several factors come into play when we consider implementing cognitive learning
principles within MOOCs. Maintaining interest of students and keeping them motivated can be a difficult task, but understanding how cognitive learning theories can help to fulfill the need for motivation can be key to designing MOOCs with higher success rates among students.

Keller’s ARCS Motivational Theory has become widely used in e-learning environments (Wang, Brown, & Ng, 2012); This is primarily because it fulfills the need for high levels of motivation (Gill & Rengel, 2013). With that said, it seems to be no coincidence that Keller’s model is very closely aligned with the five elements that are commonly associated with MOOCs, as mentioned earlier. Keller’s theory focuses on four design considerations for motivation: (1) attention, (2) relevance, (3) confidence, and (4) satisfaction (Keller & Suzuki, 1988).

According to Keller and Suzuki, attention should be maintained; information should be relevant to the learner; confidence is gained through challenges and learner control; satisfaction is gained by allowing students to apply what they learn in ways that are useful (1988). Furthermore, in a study of 784 undergraduate students enrolled in a tuition-free school, both the qualitative and quantitative findings supported the effectiveness and perceived effectiveness of Keller’s ARCS theory (Gabrielle, 2003).

**Individual Differences**

Differences between students can sometimes take away from learning, but facilitating adjustments by offering different types platforms of communication can help to foster and enhance learning experiences (Alvarez and Olivera-Smith, 2013). Motivation is one of the most important individual differences (Alessi & Trollip, 2001). Differing reinforcements (i.e. rewards and grades) and alternative learning materials (i.e. videos and readings) are effective for different people (Alessi & Trollip, 2001). In a recent study of 28 Coursera MOOCs that offered
assessments with multiple attempts for resubmission, researchers found a positive correlation between improvements in assessment scores and performance in final exams (Do, Chen, Brandman & Koller, 2013). The same study concluded that allowing students to retake assessments helps to make up for individual differences between students who may begin courses on different levels of motivation (Do, Chen, Brandman & Koller, 2013).

**Design Considerations**

E-learning requires instructional designers to find balance and build bridges between concepts of education and technology (Wang, Brown, & Ng, 2012). A cognitive learning environment should also present information in a manner that is clear and easy to receive (Alessi & Trollip, 2001). Too much information may cause an overload (Katz, 2012); it is for this reason that designers’ must find balanced ways to present information to users as well. The position of information is also highly important when it comes to cognitive learning (Alessi & Trollip, 2001).

Students’ should be able to get the information they want in an efficient manner and typically this can be accomplished by placing important information within the center of each page while putting navigation and directional cues at the top or bottom of each page. Using a grid system to organize information in a fashion that can be repeated throughout the design might make the most sense. Another way to make things more clear is to use elements that many people who use the web are already accustomed to seeing. According researcher Michael Bernard, a more ideal website would include a top navigation including a “Home” link and other internal links (2003). The use of items such as “breadcrumb” menus can also help to reduce user disorientation (Bernard, 2003).
Although it is difficult to respond to the needs of every individual, designers should seek out areas of commonality; for example, there are indications that certain fonts and colors in general may be more useful in terms of readability (Jacobson, 1999). Creating a website that offers usability and accessibility for a wide range of users, including the disabled, should be a priority when developing for a nonprofit or government agency. In fact, Title III of the Americans with Disabilities Act (ADA) requires that “places of public accommodation” be accessible to individuals with disabilities (DuPree, 2007); though it has been challenged in court on several occasions since its passing in 1990, the 2006 case of the National Federation of the Blind v. Target Corporation became the first to find that Title III applies to websites (2007). Some examples of features that help websites meet ADA compliance include ensuring that images, audio, and videos are properly tagged or have captions with descriptions.

**Conclusion**

Residents and stakeholders certainly should take on greater roles in the betterment and development of their communities. Citizen Planner training is one way to help individuals and whole communities become more effective at protecting their public interests. Designing a MOOC with the intention of having low to moderate income residents as the target audience represents a unique challenge as far as trying to create a dynamic learning experience for all participants. Though MOOCs may not be the answer for every individual, they may represent an affordable solution for those who are able to gain access to the internet either on their own devices or elsewhere (i.e., a public computer). Utilizing Keller’s ARCS Motivation Theory within a MOOC for Citizen Planners could have excellent results as far as motivating participants to complete the course and to transfer learning to real-life situations in their community. Given the
support of previous studies as mentioned earlier, it seems most likely that integrating ARCs theory with thoughtful interface design is bound to empower residents on a whole new level by offering a means for both learning and collaboration.

IMPLEMENTATION PLAN

Course Design

An ideal course would model CPI while offering self-paced learning similar to ACP without the high cost of registration and lack of instructor participation. The prototype and final product will be available at no cost in order to make the course available to a wider audience, including low to moderate income persons. Though there will not be any course fee, registration will be required in order to track student progress and allow students to establish an open and safe space within the learning environment. The course will be available at www.plannersunite.com, and it will incorporate Keller’s ARCS Motivation Theory as seen in Figure 1.
Figure 1: ARCS Motivation Categories and Planners Unite Model

<table>
<thead>
<tr>
<th>Attention</th>
<th>Relevance</th>
<th>Confidence</th>
<th>Satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceptual arousal</td>
<td>Goal orientation</td>
<td>Learning requirements</td>
<td>Intrinsic Reinforcements</td>
</tr>
<tr>
<td>Recordings that automatically start upon entering the module</td>
<td>Present course objectives and methods for success</td>
<td>Clearly present performance requirements and assessment criteria</td>
<td>Offer feedback and present opportunities to engage in enjoyable discussions</td>
</tr>
<tr>
<td>Inquiry arousal</td>
<td>Motive matching</td>
<td>Success opportunities</td>
<td>Extrinsic rewards</td>
</tr>
<tr>
<td>Posing questions to students</td>
<td>Match objectives to the needs and motives of student</td>
<td>Make modules challenging but obtainable</td>
<td>Offer certification to students who successfully complete the course</td>
</tr>
<tr>
<td>Variability</td>
<td>Familiarity</td>
<td>Personal control</td>
<td>Equity</td>
</tr>
<tr>
<td>Use of audio, visual, and reading materials</td>
<td>Use of content that most students can relate to and understand</td>
<td>Give learners different options to choose from within modules</td>
<td>Maintain consistency in each module and stated objectives</td>
</tr>
</tbody>
</table>

ARCS Theory, Keller & Suzuki, 1988

Figure 1 offers some examples of how ARCS Motivation Theory is be implemented in the prototype of the course website. The prototype design integrates design features and materials throughout the site that (1) maintain **attention**, (2) utilize **relevant** materials, (3) offer students a level of **confidence**, and (4) give **satisfaction** to students. The overall design of the prototype will combine ARCS theory with information design theory to create a functional online learning environment.

To successfully integrate each of the necessary elements of a well-designed MOOC, the course will be embedded in a responsive WordPress theme. Using WordPress will give the
designer a greater level of control over the interface design than would be available if running the course on a preexisting MOOC provider site. The WordPress platform will also allow for ADA compliant features to be easily setup and maintained so that the site can be accessible to people with disabilities. The theme selected for this project is Academy by Themex. The Academy theme is specifically designed for learning environments and it includes built-in features such as: user profiles, course ratings, built-in media players, social login, and a quiz system. The Academy theme also features short-codes for columns and course elements; These codes make it easy for a grid layout to be put into place on each page. The use of a grid system is highly beneficial because allows information to be organized in a consistent and clear manner that is easier to maintain, read, and navigate.

**Home Page**

The main page or “Home” page will have its own unique design that is clean and uncluttered, utilizing a grid that features some of the core information about the website as a whole. Key information will be placed in the center or top of each page; For example the “Home” page (Figure 2) will feature an automatic slider with calls to action and relevant information will be located just below the header and centered on the page. ARCS theory would immediately come into play as the automatic slider should trigger perceptual arousal as well as display relevant information. The “Home” page will also feature testimonials as well as recent posts about upcoming courses, student success stories, planning related issues, tools, and technology; The display of a varying information on the page should increase the visitors attention and should help to prevent them from prematurely leaving the site. The testimonials in particular will demonstrate both opportunities and rewards to give prospective students more
confidence in the program. At the top on the page, the navigation menu will feature internal links to the following pages: Home, Courses, News, About, and Support.

**Main Navigation Page Descriptions**

- **Home**: main page featuring intro to Planners Unite, news, and testimonials
- **Courses**: featuring all course listings
- **News**: featuring updates about users and stories related to planning
- **About**: background information about the Planners Unite Project
- **Support**: frequently asked questions and how-to information
- **Course Pages**: course description, links to modules, students, and questions

**Figure 2: Examples of ARCS on Homepage**
Course Pages

Each “Course” page (Figure 3) will be designed to feature relevant course information and assessment criteria in a central position within the grid layout. On the top half of the page there will be a background image behind the grid items; the use of a background image is intended to direct attention to the course requirements, assessment criteria, objectives, and methods for success, that are clearly presented in a central position at the top of the page. The top half of the grid layout will also feature course ratings and student profile images. Allowing prospective students to see links to profiles of participating students, gives them opportunities to explore each other in a way that is similar to a social networking environment and to engage in more enjoyable and meaningful discussions. Seeing other participants could also trigger more interest in each course in general. The top section on its own will hit all four key areas of the ARCS theory: (1) attention, (2) relevance, (3) confidence, and (4) satisfaction.

The lower half of the “Course” page will feature a progress bar that represents the movement toward student goals while also giving students a sense of satisfaction and confidence as they move through each lesson. Below the progress bar will be links to each individual lesson and links to course discussions. On the bottom of each course page will be links to related courses that will also be available on the site.
Lesson Pages

The design of each “Lesson” page (Figure 4) will be consistent throughout the site. At the top of every lesson will be descriptions in text or in the form of an automatic videos located at the top of every lesson page. The use of automatic videos or recordings seem most ideal in the way that they would most easily grab attention. Regardless of how the lesson description is presented, the objectives and amount of requirements will remain consistent so students are not completely caught off guard. Just below the lesson description will be other course materials such as videos and slides. YouTube and PDF materials are preferred formats that will be most consistently used throughout the courses because they are easily accessible on different types of
devices like tablets and smartphones. Below the main content will be an area dedicated to class
discussions. The discussion area will offer intrinsic reinforcement, in other words it will offer
satisfaction, through feedback and enjoyable conversation among participants.

To keep lessons clutter free and organized, the bulk of materials will be available through
links located in the sidebar. In this same sidebar will be navigation links to quizzes, a variety of
downloadable materials, and links to other lessons. The layout for each lesson page will be
identical, however they will offer varying materials and discussions to keep students fully
engaged and motivated. Assignments in each lesson will offer students several options to choose
from so that relevance is maintained throughout the course. For example, students will have the
option to discuss issues that are familiar and/or related to their goals; This type of personal
control motivates students by keeping their attention, maintaining relevance, and increasing their
confidence.

Before students can move ahead to their next lesson they will be required to pass a quiz;
this will help students to fulfill course objectives and goals. Upon passing or failing they will be
given the opportunity to retake quizzes in an effort to raise their scores. Giving students the
option to raise their scores is intended to build their confidence by allowing more opportunities
for success and ultimately this would motivate them to do better.
Figure 4: Examples of ARCS on Lesson Pages

Stylizing

The entire look and feel of the Academy theme can be stylized within its “Theme Options” (Figure 5) panel, accessible through the WordPress Dashboard. In the current style settings, red is utilized as the “Primary Color” for buttons; The color red is intended to grab attention and to highlight important links set behind the buttons. The “Secondary Color” setting is tied directly to the heading and footer of the site; Currently the secondary of color blue has been set because it is associated with loyalty, trust, and wisdom. The black text stands out on the white background, without any obstructions like background images. In the prototype the font is set to display Open Sans which gives off a clean and modern vibe that is readable. Using the “Theme Options” panel, the designer will also be able to add in custom CSS to alter font colors, sizes and so on.
Course Objectives & Evaluation

Students who successfully complete the Citizen Planning course will be able to successfully identify planning concepts such as zoning, place-making, and smart growth; they will also be able to identify best practices for effective community planning. Each module will include a quiz to assess the learner through a series of multiple choice questions that will randomize if they need or choose to retake a quiz. Quizzes can be retaken at any time to raise scores before completing the course. The instructor will also play an active role in reviewing and
responding to assignments, questions, and comments within each module discussion forum. For more details on course flow, see Figure 6.

**Figure 6: Sequence of Student Activity**

In the backend of the website, a “Statistics” board (Figure 7) will allow the sites administrative users or instructors to track the progress of each student and course. The board will feature details about how many courses each user is active in, completed courses, and averages for courses and quizzes. Additionally, randomized popups for voluntary surveys upon lesson and course completions could help to get an idea of how students feel about different aspects of the site.
ANTICIPATED OUTCOMES

A simple layout and navigation will help users to become better acquainted with the learning environment. It is expected that the incorporation of Keller’s ARCS Motivation Theory will help motivate participants from start to finish of the MOOC. The use of various learning materials (i.e. slideshows, videos, and audio) within each module should help to level the playing field for students with different learning styles and reading levels. The use of a responsive theme will allow students to easily access the training modules from a desktop, laptop, tablet, or smartphone as needed. Allowing for the program to work on multiple devices will give participants more opportunities to complete the course on the go; More importantly this will allow low-income users, many whom rely on smartphone devices for primary access to the internet, to participate in the course without needing to own a desktop or laptop.
RECOMMENDATIONS

Upon completion of developing the prototype, a pilot of the online academy should be made available through KeySpot computer labs located in three different neighborhoods of Philadelphia. The pilot group should be no greater than 30 participants and no less than 20; this will keep the group large enough to have significant findings, yet small enough for the testing staff to have frequent direct communication with each participant throughout the testing period. Participants should be surveyed both before and after the course to gauge their levels of comprehension. This process should be done about three times within a 3-6 month period, with updates the design in between each trial period. This initial period of testing should yield a well-rounded program for Citizen Planner certification. During the pilot program it would be wise to continue seeking funds and building working relationships with community groups, public libraries, and public computing labs.

CONCLUSIONS

(1) What are the benefits of using Massive Open Online Courses (MOOCs) for Citizen Planner training?

The benefits of using Massive Open Online Courses (MOOCs) for Citizen Planner training are great. The biggest benefit of MOOCs are that they designed to be accessible to large groups of people at any time or place that participants have internet access. Unlike downloadable course packages, MOOCs can be designed in ways that foster opportunities for collaborative learning with support from an instructor; Being that urban planning and community development often require a high level of communication and collaboration for success this should be a basic requirement for any reputable Citizen Planner certification program.
Unlike on-site training events, MOOCs have less time constraints, giving participants more time to study information before moving on to module evaluations. Many features can be integrated into MOOCs such as live webinars and a wide range of learning materials than could be offered at a more time restricted event. Of course, developing and maintaining a MOOC may be costly depending on the resources and instructors needed, however this problem could be alleviated by building partnerships, applying for grant funds, or by offering complete courses at an affordable rate (i.e. $5-20) in comparison to certification programs that are currently available.

(2) How can information design impact the user experience in a MOOC?

Information design can be highly impactful when it comes to the user experience in a MOOC; In fact, it can make or break a MOOC. Just like any other type of course, there needs to be structure. Without structure it can be very difficult for one to evaluate what information has been learned. Designing an effective platform for a MOOC requires an understanding of things like color theory, typography, grid layouts, and the user interface. Design elements should help lead students in the right direction and give them cues on what information is primary versus secondary. For example, a well-designed page should be easy to comprehend with readable and offer clear cues for navigation to course materials and important areas of the course.

(3) What design elements can be used to for student motivation in a MOOC?

A course that only caters to one learning style is one that is flawed or lacking. A well designed MOOC should offer a variety of information resources, A, and rewards can help to reach the needs and preferences of different people. Keller’s ARCS Motivation Theory in
particular can be used to provide much needed motivation in a MOOC environment. Following the ARCS theory, each MOOC module should: grab attention in some way like offering a variety of resources rather than just using slideshows again and again; use relevant information such as familiar stories and issues; give students confidence by setting achievable goals for each module; offer feedback and give students some sort of takeaway, such as a certificate and an ongoing project.
References


APPENDIX

Figure 8: Final Homepage Design
Figure 9: Sample Course Page with Course Description and Registration Button